

COMMONWEALTH OF VIRGINIA
Department of Environmental Quality
Valley Regional Office

STATEMENT OF LEGAL AND FACTUAL BASIS

DuPont Front Royal Plant
Warren County, Virginia
Permit No. VRO80992

Title V of the 1990 Clean Air Act Amendments required each state to develop a permit program to ensure that certain facilities have federal Air Pollution Operating Permits, called Title V Operating Permits. As required by 40 CFR Part 70 and 9 VAC 5 Chapter 80, E. I. duPont de Nemours & Co., Inc. has applied for renewal of the Title V Operating Permit for its Front Royal facility. The Department has reviewed the application and has prepared a draft Title V Operating Permit.

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FACILITY INFORMATION

Permittee

E.I. duPont de Nemours & Co., Inc.
1007 Market Street
Wilmington, DE 19898

Facility

DuPont Front Royal Plant
7961 Winchester Road
Front Royal, VA 22630

Plant ID No. 51-187-0026

SOURCE DESCRIPTION

SIC Code 2851 (Paints, Varnishes, Lacquers, Enamels, and Allied Products) and NAISC 325510 (Paint and Coating Manufacturing)

SIC Code 2821 (Plastics Materials, Synthetic Resins, and Nonvulcanizable Elastomers and NAISC 325211 (Plastics Material and Resin Manufacturing)

DuPont Front Royal Plant manufactures automotive refinish paints (SIC Code 2851/NAISC 325510) and resins (SIC Code 2821/NAISC 325211). Solvents and resin monomers are purchased and stored in storage tanks. A wash solvent mixture is used for tank cleanup between batches. Used wash solvent is recovered for re-use in a forced circulation evaporator solvent recovery process. Laboratory size paint spray booths are used to spray small test panels for color development and control. Plant steam is generated by two natural gas fired (No. 2 oil backup) boilers.

The facility is a Title V major source of volatile organic compounds (VOC) and hazardous air pollutants (HAP). This source is located in an attainment area for all pollutants, and is a PSD major source based on potential VOC emissions greater than 100 tons per year. This facility is located within 10 kilometers of a Class 1 area (Shenandoah National Park). The facility was previously permitted under a minor NSR Permit, issued on July xx, 2004.

COMPLIANCE STATUS

The facility is inspected biennially. The most recent inspection was conducted on January 23, 2004. The facility is currently in compliance with all applicable requirements.

EMISSION UNIT AND CONTROL DEVICE IDENTIFICATION

The emissions units at this facility consist of the following:

Powerhouse Boilers (PH-B1 and PH-B2)

Unit ID: PH-B1 and PH-B2
Stack ID: P-PH-PV 24-2 & 24-5
Description: 2 Cleaver Brooks boilers, Model CB-800 (1 unit) and CB-400 (1 unit)
Date of Construction: 9/17/79 (both)
Pollution Control Device Description (PCD): None
PCD ID: N/A
Pollutant Controlled: N/A
Applicable Permit Date: July xx, 2004

Steam for space heating is generated in the powerhouse. There are two small boilers fired by natural gas. Distillate oil (No. 2) is used for backup. Emissions from this unit are calculated with AP-42 emission factors.

Paint Manufacturing and Filling (M-PV)

Unit ID: M-PV
Stack ID: V-M-PV 1-26, 28-79, 88-90, 102-114
Description: Process vents from individual batch manufacturing tanks; one per tank
Pollution Control Device Description (PCD): Two fabric filter dust collectors
PCD ID: DC/WV-M-E 1 & 2
Pollutant Controlled: PM/PM-10
Applicable Permit Date: July xx, 2004

Paint is manufactured in batch tanks inside the Paint Manufacturing Building. Solvents are received from the Tank Farm, resins from the Resin Storage area, and pigments are generally added through hatches in the tank lids. Solvents, resins and other materials are added through closed loading whenever possible. Some of the tanks are used to make dispersions, which are intermediate products used to provide color to the finished product. Raw materials are added according to recipes and are usually sent to grinding mills to thoroughly disperse pigments. After testing, which includes spraying panels in the laboratory spray booths for color quality control, the finished products are filled into the various size containers in the filling area.

Each tank has a vent that extends through the roof of the Paint Manufacturing Building. VOC emissions through these individual tank vents result from displacement of vapors when raw materials are added to the tanks, when nitrogen is used to inert the tanks, and when the tanks are washed with solvent after the finished product is filled into containers. There are two dust collectors in this emission unit also. The dust collector system captures general room dust associated with filling solids (pigments) into the batch tanks. Each dust collector has a single vent stack on the Paint Manufacturing Building Roof.

Miller Mixing Machines (M-MM)

Unit ID: M-MM

Stack ID: E-MC-E 1 & 2, V-M-C-ST-1-4

Description: Miller Mixing Machines for making small, customized paint orders

Pollution Control Device Description (PCD): None

PCD ID: N/A

Pollutant Controlled: N/A

Applicable Permit Date: July xx, 2004

The Miller Mixing Machines are used to make very small batches of paint. These machines are similar to the paint mixing machines found in commercial paint stores. They are located in a separate building outside the Paint Manufacturing Building. Emissions through these individual tank vents result from the displacement of vapors when raw material are added to the tanks and when the tanks are washed with solvent after the finished product is filled into containers. Because of low production quantities and small scale equipment, emissions from Miller Mixing Machines are less than 0.1% of site total.

Manufacturing Building Exhaust (M-BE)

Unit ID: M-BE

Stack ID: E-M-E 98-105, 112-113, 120-126

Description: 17 building exhaust vents from the paint manufacturing building

Pollution Control Device Description (PCD): None

PCD ID: N/A

Pollutant Controlled: N/A

Applicable Permit Date: July xx, 2004

The Paint Manufacturing Building has 17 building exhaust fans with vents that remove solvents from the manufacturing and filling floors and maintain a negative pressure in the building. Sources of emissions from the building exhaust vents include vapors that escape into the room (such as when lid hatches are open), vapors from the filling operation, and vapors from cleaning equipment with wash solvent (except for cleaning the inside of tanks, which emit through the process vents). These VOC vapors are picked up through a series of floor sweeps and other intakes and are directed to one of the 17 vent stacks.

Because of the batch nature of the operations in the Paint Manufacturing Building, the emissions are highly variable with time. For these reasons, DuPont Front Royal has installed an analyzer to continuously measure VOC emissions from the 17 building exhaust vents. This analyzer is called the Pollution Prevention Priority Analyzer (P3A) and is the basis for emission tracking methodology for this emission unit.

Laboratory Spray Booths (L-SB)

Unit ID: L-SB

Stack ID: V-L-SB 1-12

Description: 12 laboratory size paint spray booths used for color development and quality control

Pollution Control Device Description (PCD): Filters in each spray booth

PCD ID: CD-L-SB 1-12

Pollutant Controlled: PM/PM-10

Applicable Permit Date: July xx, 2004

Paint samples from the manufacturing area are sent to the laboratory for quality control testing. This includes spraying test panels to insure proper color matching before products can be released to the filling operation. Some color development work also requires spraying panels. Emissions from the laboratory spray booths are calculated by mass balance.

Resin Manufacturing (R-PV)

Unit ID: R-PV

Stack ID: V-R-PV 1, E-R-E 78, V-R-E 79

Description: Resin reactors and process tanks vented to catch tank; one dust collector vent

Pollution Control Device Description (PCD): Griffin/McCrone Dust Collection System

PCD ID: CD-E-R-E 78

Pollutant Controlled: PM/PM-10

Applicable Permit Date: July xx, 2004

Monomers and solvents from the Tank Farm are charged to the resin reactors through feed tanks. These raw materials are heated to reflux temperature in the resin reactors while additional materials are slowly added over prescribed periods of time to control polymer structure. Each reactor has a reflux condenser to return the heated vapors back into the reactor. Batches are held at reflux temperature to achieve proper polymer molecular weight and then dropped into thin tanks, where additional solvents are added. After testing, the batch is filtered and pumped to resin storage or to a cargo tank for shipment off site. After a batch is completed, the reactors and tanks are cleaned before each incompatible batch.

Process emissions from resin manufacturing are similar to paint manufacturing, i.e. they result from tank vapor space displacement when loading, inerting and cleaning. There are some differences though. In the resin area, all tanks are connected to the catch tank outside the resin building. A continuous nitrogen purge of 1.5 cfm carries displacement vapors to the catch tank, where some is condensed and some vented to atmosphere. Also, raw material charging and tank cleaning are done at a higher temperature in the resin area. There is also a single dust collector in the Resin Manufacturing area. The dust collector captures general building dust from adding solids to the resin batches and has a single vent through the Resin Manufacturing Building roof. See Section III of the Title V permit application for details on the methodology used to track process emissions from the Resin Manufacturing area.

Equipment Leaks (EL)

Unit ID: EL
Stack ID: N/A
Description: Equipment leaks from outside storage tanks and associated pipe components
Pollution Control Device Description (PCD): None
PCD ID: N/A
Pollutant Controlled: N/A
Applicable Permit Date: July xx, 2004

The solvent/monomer piping system is mostly outdoors between the Tank Farm and Paint and Resin Manufacturing buildings. Equipment leaks can occur through the various valves and flanges in this system. Equipment leak emissions are calculated based on actual measurement data.

Solvent Recovery (SR-PV)

Unit ID: SR-PV
Stack ID: V-SR-PV 1, 2, 5, 7 & 8; V-SR-ST 3, 4 & 10, E-SR-E-9
Description: Forced Circulation Evaporator (FCE), Filmtruder and storage tanks
Pollution Control Device Description (PCD): None
PCD ID: N/A
Pollutant Controlled: N/A
Applicable Permit Date: July xx, 2004

Spent wash solvent from the paint and resin areas is sent to solvent recovery for regeneration and reuse. Dirty solvent is accumulated in two spent solvent tanks. From these tanks, solvent is fed to the two step solvent recovery operation. In the first step, dirty solvent is pumped to a Forced Circulation Evaporator (FCE) where some solvent is distilled off, condensed and sent to a hold tank. The second step involves additional processing in a Filmtruder (a thin film evaporator), where additional solvent is recovered and sent to the hold tank. Regenerated solvent is then pumped from the hold tank to a storage tank in the Tank Farm. High solids still bottoms are stored and sent off site for use in a fuels program. All air emissions in this unit are from tank vents. Additionally, a portable solvent recovery unit is located just outside of the solvent recovery building. This unit is used for extra capacity when the main solvent recovery unit is running at full capacity or is down for cleaning.

Portable tote tanks are also cleaned in the solvent recovery area. The inside of the totes are sprayed with wash solvent through roto-jet nozzles and the spent solvent is sent to the dirty solvent storage tanks. Air emissions result from displacement of vapor space in the totes with wash solvent. Emissions from the tote cleaning operation are calculated in the same way as described for the process emissions from the paint manufacturing area.

Resin Building Exhaust (R-BE)

Unit ID: R-BE
Stack ID: E-R-E 2
Description: Building exhaust from the Resin Manufacturing Building
Pollution Control Device Description (PCD): None
PCD ID: N/A
Pollutant Controlled: N/A
Applicable Permit Date: July xx, 2004

There is a blower and vent combination designed to remove vapors from the Resin Manufacturing Building, which includes the resin reactors, associated feed/thin tanks, and the resin storage tanks.

Emissions from the building exhaust are based on a stack test.

Solvent/Monomer Storage Tanks (S-ST)

Unit ID: S-ST
Stack ID: V-R-ST 49-77
Description: Outdoor solvent and monomer storage tanks
Pollution Control Device Description (PCD): Calgon Carbon Adsorbers (on monomer tanks)
PCD ID: CD-V-R-ST 57 & 69-75
Pollutant Controlled: VOC
Applicable Permit Date: July xx, 2004

Monomers and solvents are purchased and stored in 29 tanks in the outside Tank Farm. These raw materials are pumped from the Tank Farm to the paint manufacturing and resin manufacturing processes as needed. Some of the monomer tanks have carbon adsorption canisters on the tank vents for odor control. Nine of the ten monomer tanks also have vapor return lines that are used when loading the tanks from tank trucks. Emissions from the tanks with vapor return lines occur as a result of breathing losses only. Emissions from all other tanks occur as a result of both working and breathing losses. Emission calculation methodology for this unit is comprised of procedures included in EPA's TANKS 4.09 program.

Resin/Raw Material Storage Tanks (R-ST)

Unit ID: R-ST
Stack ID: V-R-ST 13-61
Description: Indoor resin storage tanks
Pollution Control Device Description (PCD): Calgon Carbon Adsorbers (on select tanks)
PCD ID: CD-V-R-ST 13-18 & 57-60
Pollutant Controlled: VOC
Applicable Permit Date: July xx, 2004

After filtration, resins are pumped to indoor storage tanks until needed in the paint manufacturing area. Since these tanks are kept at constant temperature (90° F), no breathing losses occur. Working losses are calculated with EPA's TANKS 4.09 program.

EMISSIONS INVENTORY

A copy of the 2003 annual emission update is attached as Attachment A. Actual emissions for 2003 are summarized in the following tables.

2003 Actual Emissions

Emission Unit	Criteria Pollutant Emissions (Tons/Year)				
	VOC	CO	SO ₂	PM-10	NO _x
PH-B	0.16	2.13	0.39	0.80	8.52
M-PV	11.6			0.38	
M-BE	55.9				
L-SB	3.39			0.076	
R-PV	8.37				
EL	0.59				
SR-PV	2.65				
R-BE	4.17				
M-MM	0.01				
S-ST	4.43				
R-ST	2.75				
Total	94.02	2.13	0.39	1.256	8.52

2003 Facility Hazardous Air Pollutant Emissions

Pollutant	Hazardous Air Pollutant Emissions (Tons/Year)
1,2-Butylene Oxide	0.02
Acrylic Acid	0.14
Acrylonitrile	0.02
Benzene	0.012
Ethyl acrylate	0.17
Ethylbenzene	1.39
Formaldehyde	0.008
Methanol	18.38
Methyl ethyl ketone	22.01
Methyl isobutyl ketone	1.05
Methyl methacrylate	2.09
Phthalic anhydride	0.0159
Propylenimine	0.27
Styrene	0.26
Toluene	15.55
Xylene	7.71
Antimony compounds	0.48 lb/yr
Chromium compounds	1.04 lb/yr
Cobalt compounds	0.03 lb/yr
Lead compounds	3.03 lb/yr
Manganese compounds	0.04 lb/yr
Mercury	0.001 lb/yr
Nickel compounds	0.15 lb/yr
TOTAL	69.098

EMISSION UNIT APPLICABLE REQUIREMENTS

Fuel Burning Equipment - Units PH-B1 & PH-B2

Limitations

The following limitations are state BACT requirements from the minor NSR permit issued on July xx, 2004. Please note that the condition numbers are from the 2004 permit; a copy of the permit is enclosed as Attachment B.

Condition 4: Approved fuels for the Cleaver Brooks boilers (Units PH-B1 & PH-B2) are natural gas and distillate oil.

- Condition 5: Limit on sulfur content for distillate oil.
- Condition 6: Hourly emission limits for criteria pollutants from the Cleaver Brooks boiler (Unit PH-B1).
- Condition 7: Hourly emission limits for criteria pollutants from the Cleaver Brooks boiler (Unit PH-B2).
- Condition 8: Total annual emission limits for criteria pollutants from both Cleaver Brooks boilers (Units PH-B1 & PH-B2).
- Condition 9: Visible emission limit for the Cleaver Brooks boilers (Units PH-B1 & PH-B2).

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

9 VAC 5-50-20 E, Compliance. This requires proper operation and maintenance of any affected facility.

Periodic Monitoring and Recordkeeping

The monitoring and recordkeeping requirements in Conditions 5 and 18 of the minor NSR permit dated July xx, 2004 have been modified to meet Part 70 requirements.

The permit requires proper operation of the boiler to comply with the particulate matter and the visible emission requirements for the Cleaver Brooks Boilers.

Periodic monitoring for the visible emission limit on the Cleaver Brooks boilers, when operating on distillate oil, includes a weekly inspection of the boiler stacks. The inspection will include a determination of the presence of visible emissions. If during the inspection, visible emissions are observed, an EPA Method 9 (40 CFR Part 60, Appendix A) visible emission evaluation (VEE) will be conducted. The VEE will be conducted for a minimum of six minutes. If any of the observations exceed the applicable opacity limit, the observation period will continue for a total of sixty minutes of observation. Visible emissions are not expected while burning natural gas. Therefore, weekly inspections will not be required when the boilers are operating on natural gas. The permittee will monitor the sulfur content of each shipment of distillate oil, and will maintain certifications from each fuel supplier that demonstrates compliance with the 0.3%, by weight, requirement.

The permittee will keep records of monthly and annual throughput of each type of fuel.

Actual emissions from the operation of the two boilers will be calculated using the following equations:

1. For natural gas combustion:

$$E = F \times N$$

..... Equation 1

Where:

E = Emission Rate (lb/time period)

F = Pollutant specific emission factors as follows:

TSP	=	13.7 lb/million ft ³
PM-10	=	13.7 lb/million ft ³
SO ₂	=	0.6 lb/million ft ³
CO	=	35.0 lb/million ft ³
NO _x	=	140.0 lb/million ft ³
VOC	=	5.8 lb/million ft ³

N = Natural gas consumed (million ft³/time period)

2. For distillate oil combustion:

$$E = F \times O$$

.....Equation 2

Where:

E = Emission Rate (lb/time period)

F = Pollutant specific emission factors as follows:

TSP	=	2.0 lb/1000 gal
PM-10	=	1.0 lb/1000 gal
SO ₂	=	142.0 S lb/1000 gal (S = weight percent sulfur)
CO	=	5.0 lb/1000 gal
NO _x	=	20.0 lb/1000 gal
VOC	=	0.252 lb/1000 gal

O = Distillate oil consumed (1000 gal/time period)

The hourly emission limits for each boiler were established based on the higher emission rate of the fuels combusted when operating at capacity. The annual emission limits for the combined operation of both boilers are based on the higher emission rate of either distillate oil or natural gas when both boilers are operating at capacity for 8760 hours per year. Therefore, if the boilers are operated at capacity, or below, there should not be a violation of the hourly or annual

emission rates. Calculations have been included in Attachment C to demonstrate how the limits were obtained.

The permit includes requirements for maintaining records of all monitoring and testing. These records include: The monthly and annual throughput of natural gas (in million cubic feet) and distillate oil (in 1000 gallons) for the two boilers; fuel supplier certifications; DEQ approved, pollutant-specific emission factors and equations which relate fuel throughput and sulfur content to hourly and annual emission limits; weekly boiler stack inspection results when burning distillate oil; and results of any Method 9 tests required. The permittee shall have available good written operating procedures and a maintenance schedule for the boilers. These procedures shall be based on the manufacturer's recommendations, at minimum.

Compliance Assurance Monitoring (CAM)

The boilers do not have any add-on control equipment and are therefore not subject to CAM.

Testing

The permit does not require source tests. A table of test methods has been included in the permit if testing is performed. The Department and EPA have authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard.

Reporting

No specific reporting has been included in the permit for the fuel burning equipment.

Streamlined Requirements

The 10% opacity limit for the boiler stacks is more stringent than the Virginia Administrative Code Standard for visible emissions, 9 VAC 5-50-80. Therefore, only the more stringent 10% opacity was included in the permit.

Paint Manufacturing Equipment - Unit M-PV

Limitations

The following limitations are state BACT requirements from the minor NSR permit issued on July xx, 2004. Please note that the condition numbers are from the 2004 permit; a copy of the permit is enclosed as Attachment B.

Condition 3: Particulate emissions from the addition of pigments and other dry stock materials shall be controlled by fabric filters.

Condition 12: Visible emission limit for fabric filter stacks.

Condition 26: Requires the development of a maintenance schedule and an inventory of spare parts for air pollution control equipment.

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

9 VAC 5-40-260 - Particulate matter process weight limit for process units apply to the paint manufacturing equipment. The limit is determined by the equation $E = 4.10P^{0.67}$, where E is the particulate limit in pounds per hour and P is the process weight limit in tons per hour.

Periodic Monitoring

The monitoring requirements in Condition 3 of the minor NSR permit dated July xx, 2004 have been modified to meet Part 70 requirements.

The permit requires operation of fabric filters to demonstrate compliance with the particulate matter process weight limit and visible emission requirements. Properly operating fabric filters can comply with both the particulate matter process weight limits and the 5% opacity visible emission limit.

The maximum amount of pigment that can be added in the paint manufacturing process is 2.5 tons/hr. Applying the process weight rule to the addition of pigment results in an hourly limit of 7.58 lbs/hr at the maximum capacity of 2.5 tons/hr.

A fabric filter can achieve an outlet concentration of 0.01 gr/cf (a number of NSPS standards which are met by fabric filters are required to achieve concentrations of 0.01 gr/dscf or less). There are two fabric filters controlling the addition of pigments. One has an exhaust rate of 12000 cfm (DC/WV-M-E-1) and the other has an exhaust rate of 2600 cfm (DC/WV-M-E-2). An outlet concentration of 0.01 gr/cf at 12000 cfm equals 1.03 lbs/hr, which is in compliance with the 7.58 lbs/hr limit. An outlet concentration of 0.01 gr/cf at 2600 cfm equals 0.22 lb/hr, which is also in compliance with the 7.58 lbs/hr limit.

The permittee will inspect the fabric filters on a weekly basis. The inspection will include a determination of the presence of visible emissions, and an observation of the pressure drop across the filter. A properly operating fabric filter controlling emissions from the addition of pigments and other dry stock materials is expected to have no visible emissions. The presence of visible emissions require that the permittee take timely corrective action such that the fabric filter resumes operation with no visible emissions. Also, pressure drop reading (inches of water or pounds per square inch (PSI)) are alarmed with both high and low set points to identify the need for system maintenance. An annual internal inspection of each fabric filter is also required to ensure the structural integrity of the fabric filters.

Compliance with the particulate matter process weight rate is therefore demonstrated by the operation of the fabric filters, and the weekly fabric filter inspections with visible emission check to assure proper operation.

Recordkeeping

The recordkeeping requirements in Condition 26 of the minor NSR permit dated July xx, 2004 have been modified to meet Part 70 requirements. The permittee is required to keep records on the dates and times that the pressure drop alarm triggered system maintenance. The permittee is also required to keep records on the weekly and annual inspections of the fabric filters. Weekly inspection records will include the date and name of person performing each inspection, the pressure drop, whether visible emissions were present, and any maintenance or repairs performed as a result of the inspection. Annual inspection records will include the date and person performing the inspection, a list of items inspected, and any maintenance or repairs performed as a result of the inspection. Records are also required for scheduled and non-scheduled maintenance on the air pollution control equipment.

Compliance Assurance Monitoring (CAM)

Neither pollution control device DC/WV-M-E-1 nor DC/WV-M-E-2 is subject to CAM because the uncontrolled particulate emissions for each control device are less than 100 tons/yr. Emission calculations provided by the applicant for these control devices are included in Attachment D.

Testing

The permit does not require source tests. A table of test methods has been included in the permit if testing is performed. The Department and EPA have authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard.

Reporting

No specific reporting has been included in this part of the permit. Reporting requirements have been included in the Facility Wide section.

Streamlined Requirements

The 5% opacity limit for the fabric filter stacks is more stringent than the Virginia Administrative Code Standard for visible emissions, 9 VAC 5-50-80. Therefore, only the more stringent 5% opacity was included in the permit.

Laboratory Spray Booth Equipment - Unit L-SB

Limitations

The following limitations are state BACT requirements from the minor NSR permit issued on July xx, 2004. Please note that the condition numbers are from the 2004 permit; a copy of the permit is enclosed as Attachment B.

Condition 3: Particulate emissions from the paint spray booths shall be controlled by fabric filters.

Condition 12: Visible emission limit for fabric filter stacks.

Condition 26: Requires the development of a maintenance schedule and an inventory of spare parts for air pollution control equipment.

Periodic Monitoring and Recordkeeping

The monitoring requirements in Condition 3 of the minor NSR permit dated July xx, 2004 have been modified to meet Part 70 requirements.

The permit requires operation of fabric filters to demonstrate compliance with the visible emission requirements. Properly operating fabric filters can comply with the 5% opacity visible emission limit.

The permittee will inspect the fabric filter exhausts on a weekly basis. The inspection will include a determination of the presence of visible emissions. A properly operating fabric filter controlling emissions from the laboratory spray booths is expected to have no visible emissions. The presence of visible emissions require that the permittee take timely corrective action such that the fabric filter resumes operation with no visible emissions.

The recordkeeping requirements in Condition 26 of the minor NSR permit dated July xx, 2004 have been modified to meet Part 70 requirements. The permittee is required to keep records on spray booth filter inspection results including date and name of person performing each inspection, whether or not there were visible emissions, and any maintenance or repairs performed as a result of these inspections. Records are also required for scheduled and non-scheduled maintenance on the air pollution control equipment.

Compliance Assurance Monitoring (CAM)

Although Unit L-SB has fabric filters for control of particulate emissions, CAM does not apply to this unit because the uncontrolled particulate emissions are less than 100 tons/yr. Emission calculations provided by the applicant for this unit are included in Attachment D.

Testing

The permit does not require source tests. A table of test methods has been included in the permit if testing is performed. The Department and EPA have authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard.

Reporting

No specific reporting has been included in this part of the permit. Reporting requirements have been included in the Facility Wide section.

Streamlined Requirements

The 5% opacity limit for the fabric filter stacks is more stringent than the Virginia Administrative Code Standard for visible emissions, 9 VAC 5-50-80. Therefore, only the more stringent 5% opacity was included in the permit.

Resin Manufacturing Equipment - Unit R-PV

Limitations

The following limitations are state BACT requirements from the minor NSR permit issued on July xx, 2004. Please note that the condition numbers are from the 2004 permit; a copy of the permit is enclosed as Attachment B.

Condition 3: Particulate emissions from the addition of pigments and other dry stock materials that shall be controlled by a fabric filter.

Condition 12: Visible emission limit for fabric filter stack.

Condition 26: Requires the development of a maintenance schedule and an inventory of spare parts for air pollution control equipment.

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

9 VAC 5-40-260 – Particulate matter process weight limit for process units apply to the paint manufacturing equipment. The limit is determined by the equation $E = 4.10^{0.67}$, where E is the particulate limit in pounds per hour and P is the process weight limit in tons per hour.

Periodic Monitoring

The monitoring requirements in Condition 3 of the minor NSR permit dated July xx, 2004 have been modified to meet Part 70 requirements.

The permit requires operation of fabric filters to demonstrate compliance with the particulate matter process weight limit and visible emission requirements. Properly operating fabric filters can comply with both the particulate matter process weight limits and the 5% opacity visible emission limit.

A properly operated fabric filter can comply with the process weight rate limit. The maximum amount of pigment that can be added in the resin manufacturing process is 5.0 tons/hr. Applying the process weight rule to the addition of pigment results in an hourly limit of 12.0 lbs/hr at the maximum capacity of 5.0 tons/hr.

A fabric filter can achieve an outlet concentration of 0.01 gr/cf (a number of NSPS standards which are met by fabric filters are required to achieve concentrations of 0.01 gr/dscf or less). There is one fabric filter controlling the addition of pigments. The fabric filter (DC-WV-R-E-79 (previously named CD-E-R-E-78)) has an exhaust rate of 2600 cfm. An outlet concentration of 0.01 gr/cf at 2600 cfm equals 0.22 lb/hr, which is also in compliance with the 12.0 lbs/hr limit.

The permittee will inspect the fabric filters on a weekly basis. The inspection will include a determination of the presence of visible emissions, and an observation of the pressure drop across the filter. A properly operating fabric filter controlling emissions from the addition of pigments and other dry stock materials is expected to have no visible emissions. The presence of visible emissions require that the permittee take corrective action. An annual internal inspection of each fabric filter is also required to ensure the structural integrity of the fabric filter.

Compliance with the particulate matter process weight rate is therefore demonstrated by the operation of the fabric filters, and the weekly fabric filter inspections with visible emission check to assure proper operation.

Compliance Assurance Monitoring (CAM)

The fabric filter (DC-WV-R-E-79) is not subject to CAM because the uncontrolled particulate emissions for the control device are less than 100 tons/yr. Emission calculations provided by the applicant for this control device are included in Attachment D.

Recordkeeping

The recordkeeping requirements in Condition 26 of the minor NSR permit dated July xx, 2004 have been modified to meet Part 70 requirements. The permittee is required to keep records on the weekly and annual inspections of the fabric filters. Weekly inspection records will include the date and name of the person performing each inspection, the pressure drop, whether visible emissions were present, and any maintenance or repairs performed as a result of the inspection. Annual inspection records will include the date and person performing the inspection, a list of items inspected, and any maintenance or repairs performed as a result of the inspection. Records are also required for scheduled and non-scheduled maintenance on the air pollution control equipment.

Testing

The permit does not require source tests. A table of test methods has been included in the permit if testing is performed. The Department and EPA have authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard.

Reporting

No specific reporting has been included in this part of the permit. Reporting requirements have been included in the Facility Wide section.

Streamlined Requirements

The 5% opacity limit for the fabric filter stacks is more stringent than the Virginia Administrative Code Standard for visible emissions, 9 VAC 5-50-80. Therefore, only the more stringent 5% opacity was included in the permit.

Resin Storage - Unit R-ST

Limitations

There are no limitations under this section, only monitoring, recordkeeping, and reporting.

Periodic Monitoring and Recordkeeping

Tanks 1400, 1410, 1420, 1430, 1440, 1450, 1460, 1470, 1480, 1490, 1500, and 1510 are subject to certain parts of the monitoring and recordkeeping requirements of the 40 CFR 60 Subpart Kb, Standards of Performance for Volatile Organic Liquid Storage Vessels. These monitoring and recordkeeping requirements are contained in Conditions 20 and 21 of the minor NSR permit dated July xx, 2004 and have been incorporated into the permit. Please note that the condition numbers are from the 2004 permit; a copy of the permit is enclosed as Attachment B. Tanks 1200, 1220, 1320, 1340, 1350, and 1370 were identified in the Title V permit application as also being subject to certain parts of the monitoring and recordkeeping requirements. These additional tanks were also included in the permit.

Condition 21: Requires the permittee to keep readily acceptable records showing the dimension of the storage vessel and an analysis showing the capacity of the storage vessel for each of the vessels.

Condition 25: Requires the permittee to maintain a record of the volatile organic liquid (VOL) stored, the period of storage, and the maximum true vapor pressure of that VOL during the respective storage period for any of the vessels listed above that store a VOL with a maximum true vapor pressure greater than or equal to 15.0 kPa.

Although there are carbon adsorbers on some of the tanks, there is no periodic monitoring required for these control units because the emission calculations do not take credit for these control units. The permittee does monitor these units. The carbon adsorbers are checked quarterly with an OVA meter. When the OVA meter reading exceeds 50 ppm, the carbon adsorber unit is replaced.

Compliance Assurance Monitoring (CAM)

The carbon adsorbers are not subject to CAM because the uncontrolled VOC emissions for each control device is less than 100 tons/yr. Emission calculations provided by the applicant for this control device are included in Attachment D.

Reporting

The permittee shall notify the EPA Administrator and the Director, Valley Regional Office, within 30 days, when the maximum true vapor pressure of the Volatile Organic Liquid (VOL) stored in the vessel exceeds 27.6 kPa, for each of the vessels listed above.

Streamlined Requirements

There are no streamlined requirements.

Facility Wide Requirements

Limitations

The following limitations are state BACT requirements from the minor NSR permit issued on July xx, 2004. Please note that the condition numbers are from the 2004 permit; a copy of the permit is enclosed as Attachment B.

Condition 10: Emission limit for the total process emissions of volatile organic compounds (VOCs) from the manufacture of paint and resin.

Condition 11: Emission limit for the total process emissions of particulate matter (PM) and PM-10 from the manufacture of paint and resin.

Periodic Monitoring

The monitoring requirements in Conditions 13, 14, 15, 16, and 17 of the NSR permit dated July xx, 2004 have been modified to meet Part 70 requirements.

To determine if the VOC limit is met, actual monthly VOC emissions shall be calculated using the following formula:

$$E_{VOC} = E_{M-PV} + E_{M-BE} + E_{L-SB} + E_{R-PV} + E_{EL} + E_{SR-PV} + E_{R-BE} + E_{M-MM} + E_{S-ST} + E_{R-ST}$$

.....Equation 3

where:

E_{VOC} = Total process emissions of VOC from the manufacture of paint and resin, expressed as tons/calendar month.

E_{M-PV} = VOC emissions from the batch manufacturing of paint, calculated using procedures contained in EPA's Control Technologies Guideline, "Control of Volatile Organic Compound Emissions from Batch Processes" dated November 1993.

- E_{M-BE} = VOC emissions from the 17 paint manufacturing building exhausts, calculated based on data generated from the P3A.
- E_{L-SB} = VOC emissions from the 12 laboratory spray booths, calculated by mass balance
- E_{R-PV} = VOC emissions from the batch manufacturing of resin, calculated using procedures contained in EPA's Control Technologies Guideline, "Control of Volatile Organic Compound Emissions from Batch Processes" dated November 1993.
- E_{EL} = VOC emissions from equipment leaks, calculated based on on-site measured data
- E_{SR-PV} = VOC emissions from the solvent recovery process, calculated using EPA's Tanks 4.09 program or equivalent method approved by the DEQ and procedures contained in EPA's Control Technologies Guideline, "Control of Volatile Organic Compound Emissions from Batch Processes" dated November 1993.
- E_{R-BE} = VOC emissions from the resin manufacturing building exhaust, based on stack tests and ventilation flow rate.
- E_{M-MM} = VOC emissions from the Miller paint mixing machines, calculated using procedures contained in EPA's Control Technologies Guideline, "Control of Volatile Organic Compound Emissions from Batch Processes" dated November 1993.
- E_{S-ST} = VOC emissions from solvent/monomer storage, calculated using EPA's Tanks 4.09 program or equivalent method approved by the DEQ.
- E_{R-ST} = VOC emissions from resin storage, calculated using EPA's Tanks 4.09 program or equivalent method approved by the DEQ.

VOC emissions from the paint manufacturing building exhausts (E-M-E 98-105, 112-113, 120-126) are to be continuously monitored using the Pollution Prevention Prioritization Analyzer (P3A). Raw VOC concentrations from the P3A shall be speciated and converted into mass emission rates as described in Section III, pages 11 and 12, of permittee's Title V permit application dated March 4, 2004.

To ensure accurate data is supplied by the P3A, the following monitoring requirements are required. A Quality Control (QC) program which includes procedures and operations for the following activities is required: calibration of the P3A, calibration drift (CD) determination and adjustment of the P3A, preventative maintenance of the P3A including spare parts inventory, data recording, calculations and reporting, accuracy audit procedures including sampling and analysis methods, program and corrective action for malfunctioning of the P3A. A Quality Assurance (QA) program which includes the following procedures is required: zero and span checks are to be made daily as described in 40 CFR 60.13 (d) (1), in accordance with the method

prescribed by the manufacturer, the P3A is to be audited at least once each calendar quarter by a method approved by the Director, Valley Regional Office. At least biennially, the quarterly audit shall consist of a relative accuracy and a calibration drift test.

The permittee is to strive for a minimum data availability of 90% for the P3A. Under no circumstance is the data availability to fall below 80%. During P3A downtime, the permittee is to calculate emissions based on the actual number of hours of operation, the maximum concentration of VOC recorded, and current product formulation and wash solvent composition.

To determine if the particulate matter limit is met, actual Particulate Matter and PM-10 emissions from the manufacture of paint and resin will be calculated using the following equations:

- a. For pigment and other dry stock addition in paint and resin manufacture:

$$E_1 = F \times N \times [100 - CE/100]$$

..... Equation 4

Where:

E_1 = Emission Rate (lb/time period)

F = Pollutant specific emission factors as follows:

PM = 0.005 lb/lb (emission factors derived from tests at this facility)

$PM-10$ = 0.005 lb/lb

N = Total pigments and other dry stock consumed (lb/time period)

CE = Control Efficiency of fabric filters (99.5%)

- b. For paint spray booths:

$$E_2 = O \times P \times [100 - CE/100]$$

.....Equation 5

E_2 = the PM or PM-10 emissions in pound per time period

O = lb overspray per panel, determined to be 0.10 lb/panel (derived from tests at this facility)

P = Number of panels sprayed per time period

CE = Control efficiency of fabric filters (96.0%)

c. Total particulate emissions:

$$E_T = E_1 + E_2$$

.....Equation 6

E_T = total particulate emissions from manufacture of paint and resin

E_1 = total particulate emissions from the addition of pigment and other dry stock

E_2 = total particulate emissions from the paint spray booths

Recordkeeping

The recordkeeping requirements in Conditions 14, 15, and 18 of the NSR permit dated July xx, 2004 have been modified to meet Part 70 requirements. The permit includes requirements for maintaining records of all monitoring and testing; these records include:

Monthly and annual cumulative process VOC emissions (in tons). The annual emissions shall be calculated as the sum of each consecutive 12-month period.

Monthly and annual cumulative process particulate emissions (in pounds). The annual emissions shall be calculated as the sum of each consecutive 12-month period.

Parameters needed to verify emissions calculated by EPA's CTG for Batch Processes for paint and resin manufacturing, solvent recovery, and Miller mixing machines. Include monthly and annual production (in gallons) for paint and resin.

Parameters needed to calculate emissions from spray booths, including the number of panels sprayed monthly and annually.

Measurements needed to calculate fugitive emissions from equipment leaks.

Parameters needed to calculate fugitive emissions from solvent/monomer and resin storage tanks with EPA's Tanks 4.09 program or equivalent as approved by the DEQ.

Parameters needed to calculate fugitive emissions from the resin manufacturing building exhaust.

Daily records of the data availability for the P3A.

Data availability, expressed as the percent of hours of data available in each month, of VOC concentrations monitored by the P3A.

Results of the QA program zero and span checks and audits.

A copy of the P3A Quality Control (QC) program and procedures.

A copy of the P3A Quality Assurance (QA) program and procedures.

A copy of the monthly spreadsheet for calculating VOC emissions; this spreadsheet calculates emissions during P3A downtime based on actual hours of operation and maximum concentration measured just before downtime, current product formulation, and wash solvent composition.

Maintenance logs and repair records of the building exhaust system.

Copies of the monthly process weight rate inputs to all emission units that emit particulate matter (PM) and PM-10.

DEQ approved, pollutant-specific emission factors and equations that relate particulate usage to the emission limit.

Testing

The permit does not require source tests. A table of test methods has been included in the permit if testing is performed. The Department and EPA have authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard.

Reporting

The reporting requirements of Condition 19 of the NSR permit dated July xx, 2004 have been included. The permit requires quarterly reports documenting the following:

- a. Dates included in the calendar quarter.
- b. Monthly and annual cumulative process VOC emissions (in tons). The annual emissions shall be calculated monthly as the sum of each consecutive twelve (12) month period.
- c. Monthly and annual cumulative process particulate emissions (in pounds). The annual emissions shall be calculated monthly as the sum of each consecutive twelve (12) month period.
- d. Monthly average of P3A data availability.

Streamlined Requirements

There are no streamlined requirements.

Facility Wide Requirements for Hazardous Air Pollutants Emissions

As a major source of HAPs, DuPont is subject to four rules in 40 CFR Part 63 (National Emission Standards for HAPs (NESHAPs) from Source Categories). All four rules have been promulgated; one has not yet been published in the Federal Register and does not have an established compliance date. The applicable rules are:

- Miscellaneous Organic NESHAP (40 CFR Part 63 Subpart FFFF): applicable to resin manufacturing processes involving a chemical reaction in the resin production area and solvent recovery operations. Compliance date: November 10, 2006.
- Miscellaneous Coating Manufacturing NESHAP (40 CFR Part 63 Subpart HHHHH): applicable to the paint manufacturing processes and affiliated equipment that do not involve chemical reaction but involve blending and formulation activities. Compliance date: December 11, 2006.
- Organic Liquid Distribution NESHAP (40 CFR Part 63 Subpart EEEE): applicable to the outdoor solvent unloading racks and piping to the storage tanks. Compliance date: February 3, 2007.
- Industrial, Commercial, and Institutional boiler and Process Heaters NESHAP (40 CFR Part 63 Subpart DDDDD): applicable to the boilers. Final rule has not yet been published in the Federal Register. Compliance date: three years after the date of final rule publication in the Federal Register.

The permit includes the requirement to comply with each of the NESHAPs listed above by the compliance dates, unless the facility obtains federally enforceable limits on its facility-wide emissions of HAPs to below major-source thresholds (“synthetic minor HAP limits”) prior to the compliance dates. Currently DuPont has plans to drastically reduce their HAP emissions through reformulation. However, should reformulation measures not be realized prior to the earliest of the compliance dates for the applicable NESHAPs (i.e., before November 10, 2006) measures are also underway to ensure compliance with each NESHAP. At this time, DuPont is unsure of how they plan to comply with each NESHAP. Therefore, details of each NESHAP have not been incorporated into the proposed permit. If DuPont does not become a synthetic minor source, its Title V permit will need to be modified to include detailed compliance requirements (including all control, operational, work practice, monitoring, recordkeeping, reporting, and testing requirements, as applicable) from each NESHAP during the renewal term.

Notification requirements have not been included, as these have already been completed.

GENERAL CONDITIONS

The permit contains general conditions required by 40 CFR Part 70 and 9 VAC 5-80-110, that apply to all Federal operating permit sources. These include requirements for submitting semi-annual monitoring reports and an annual compliance certification report. The permit also

requires notification of deviations from permit requirements or any excess emissions, including those caused by upsets, within one business day.

FUTURE APPLICABLE REQUIREMENTS

None identified.

INAPPLICABLE REQUIREMENTS

The permittee did not identify any inapplicable requirements in their application. Therefore, no inapplicable requirements are included in the permit.

COMPLIANCE PLAN

The permittee is currently in compliance with all applicable requirements. No compliance plan is included in the application or in the permit.

INSIGNIFICANT EMISSION UNITS

The insignificant emission units are presumed to be in compliance with all requirements of the Clean Air Act as may apply. Based on this presumption, no monitoring, recordkeeping or reporting shall be required for these emission units in accordance with 9 VAC 5-80-110.

Insignificant emission units include the following:

Emission Unit No.	Emission Unit Description	Citation	Pollutant(s) Emitted (9 VAC 5-80-720 B)	Rated Capacity (9 VAC 5-80-720 C)
V-M-ST-8, 10 to 13, 77 & 78, 81 to 85, 102 to 109	Dispersion Storage Tanks	9 VAC 5-80-720 B	VOC	-
V-SR-ST-11	Wastewater Storage Tank	9 VAC 5-80-720 B	VOC	-
E-SR-E-10, 22 & 23	Exhaust Fan	9 VAC 5-80-720 B	VOC	-
E-R-E-5 to 11, 45 & 46	Wall and Exhaust Fans	9 VAC 5-80-720 B	VOC	-
V-R-PV-3 & 4, V-R-PV- 5 & 6, V-R-PV-12	Fire Relief Vents, Hot Box Vents, Maintenance Tank	9 VAC 5-80-720 B	VOC	-
V-HTF-21-2	HTF Stack	9 VAC 5-80-720 B	VOC	-
---	Resin Product Loading Operations	9 VAC 5-80-720 B	VOC	-

---	Wastewater Loading Operations	9 VAC 5-80-720 B	VOC	-
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¹The citation criteria for insignificant activities are as follows:

- 9 VAC 5-80-720 A - Listed Insignificant Activity, Not Included in Permit Application
- 9 VAC 5-80-720 B - Insignificant due to emission levels
- 9 VAC 5-80-720 C - Insignificant due to size or production rate

CONFIDENTIAL INFORMATION

The permittee did not submit a request for confidentiality. All portions of the Title V application are suitable for public review.

PUBLIC PARTICIPATION

A public notice appeared in the Warren Sentinel on July xx, 2004 announcing a 30-day public comment period for this permit. The public comment period ended on August xx, 2004, and EPA's comment period ended on September xx, 2004 (concurrent review of the permit as both draft and proposed).

ATTACHMENT A

2003 Annual Emission Update

ATTACHMENT B

Minor NSR Permit
(dated July xx, 2004)

ATTACHMENT C

Emission Calculations for Boilers

ATTACHMENT D

Emission Calculations for CAM applicability